# SCIENCE.

FRIDAY, NOVEMBER 7, 1884.

## *COMMENT AND CRITICISM.*

THE treasury officials have partially reversed the obnoxious rulings by which recently they compelled public institutions to pay duty, or incur more onerous burdens still, in order to get through the custom-house the publications which congress had said they should have free of such charge. Their last circular is almost insulting in pointedly prescribing the business-agents of such institutions as persons whose oaths they will not take. The government of these bodies, situated often at such a distance from ports of entry that they cannot conveniently attend to the business details of importation, appoint agents, whom they trust, and who, from experience, can serve the institutions better than they can serve themselves. These institutions are now practically told by the treasury officials that the oaths of such appointees are not good enough for them, and that, to get the privileges which congress has awarded to these institutions in the interests of learning and progress, the governing bodies of them must be subjected to such impertinent discipline as it pleases the treasury officials to impose. They are plainly told that they may accredit all the agents they please, but the oaths of such agents cannot be taken. An oath, then, is not an oath, except as the treasury may approve the giver of it. This body of men who are thus traduced by the government are the importing book-dealers of the country.

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THE recent conference at St. Louis, of representatives from nearly all of the existing state boards of health, and their decision to meet at Washington in December, bring prominently forward the question of a national authority in health matters. The present National board of health was organized in April, 1879, under an act passed at the close of the forty-fifth congress. The board consists of seven members appointed by the president, one medical officer of army, navy, and marine hospital service respectively, and one officer from the department of justice. In the early days of the board it was called upon to deal with a very serious outbreak of yellow-fever in Memphis and other localities. The measures adopted at this time had an undoubted influence in the suppression of these outbreaks. In addition to this work, numerous investigations into causes of epidemic diseases and sanitary survey were made, the published results of which have become too well known to need recital here. While doing a most useful work, the moderate appropriation at the service of the board attracted the hostile criticism of certain members of congress, who succeeded in procuring legislation that limited the fund at the disposal of the board to twenty-five thousand dollars, with the proviso that their duties and investigations should be limited to the diseases cholera, yellow-fever, and small-pox. The next congress made no appropriation whatever for the board, and it is practically dead.

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Having in mind the valuable services rendered by this organization, it is not easy, at first sight, to perceive the causes of its overthrow. These were, first, the department of the treasury, which asserts a claim to the disbursement of all funds appropriated by congress for the suppression of epidemic diseases, and to the selection of a medical officer of its own as agent in these operations; second, the active hostility of the State board of health of Louisiana, and the jealousy of some of the great commercial communities in regard to all quarantine restrictions; last, the composition of the board itself. As above stated, this consists of seven members at large, representing but seven of the thirty-eight states, — possibly the most important, perhaps the smallest, in the Union. Pennsylvania and Ohio have not been represented on

the board. While it has thus far apparently been composed of men of the best character and of high scientific attainments, there is no certainty, possibly but little probability, that the same standard can be maintained in the future. Any renewal of appropriations, or increase of powers, would be likely to make the board attractive to the place hunter.

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Coming at this time, the St. Louis conference has an unusual significance. This voluntary assembly of representatives of the only public bodies possessing any real power to deal with epidemic disease, or questions of public health, might very easily be transformed into a national organization, certain to control, within the above limits, public opinion. Let the central authority be composed of delegates selected by state boards of health, when such boards exist; when there are none, by the governors of the respective states. Such a body may be convened at any time, in case of need: ordinarily, one or two sessions annually would be sufficient. An executive committee of moderate size, with permanent officers at Washington, could attend to such routine work as congress might see fit to intrust the board with. It is not advisable to burden a board of health with great patronage or much executive power. It should be largely devoted to scientific investigation of epidemic disease. These must, of necessity, be conducted on a scale so extensive that no private laboratory, public institution, or state board of health, has been or will be able to undertake them. The fact that the members of this association would be also members of powerful state organizations, would secure the co-operation of the various states, and would legitimately control, in a high degree, congressional action, and, as a board of consultation, would, when applied to, speak with an influence that no department at Washington could afford to neglect.

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The secretaries of war and of the navy have indirectly raised what may prove a troublesome question respecting the duties of members of the National academy of sciences, who are also officers of the government. Our readers may remember, that, when the organization of the surveys was reported upon by the academy some years ago, a very strong protest against its conclusions was made by the chief of engineers, in which one of the strongest points was, that the men who conducted such surveys were not represented upon the committee which made the report. When a question very similar was submitted to the academy last summer, in order to elicit a report upon the coast and geological surveys, the signal-office, and the hydrographic office, the policy was adopted of putting an officer of the army, and one of the navy, upon the committee. When this fact became known to the heads of the departments, they decided that no officer of the government should take a place which might require him to report upon the policy of his chief; and both members, therefore, withdrew from the committee.

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Without discussing the application of this principle in the present case, we hope it will in the future be so limited and defined as not to cripple the academy in cases where it might happen that there are no experts available except those who are officially connected with the government. During a state of war the most important questions submitted to the academy would probably pertain to instruments and appliances to be used in warfare, and it would clearly be impossible to omit from its committees the very men who knew most about the subject-matter submitted. The academy is, we believe, the only government organization now existing, or which ever has existed, the members of which were required to give their services to the government without charge whenever called upon. As such, the body would seem entitled to a large measure of consideration on the part of the government, which will be increased when we call to mind the value and importance of its reports. No amount of labor and research has been spared in cases when methods of defrauding the revenue by the chemical manipulation of products had to be looked into. The efficiency which

has characterized the workings of the present geological survey affords an example of the practical value of the academy's advice which should not be overlooked. While there may be one or two instances in which the opinions of the experts have not been justified by the results, we believe that the proportion of failure to success will, on critical examination, turn out to be less than in any other class of questions which the government has had to decide. The only reward received by the men who render these services is that of public appreciation. The damage which would be done by any act of the government, depriving the workers of this little reward, is a serious matter, and becomes all the more serious when we reflect, that, at more than one period in the history of the academy, the question whether it should continue its government existence hung in the balance.

## *LETTERS TO THE EDITOR.*

### The recognition, by marine animals, of the hour of the day.

THE changes produced by the tides are apparently much more important to marine animals than those which are due to the rotation of the earth; and the fact that many important physiological changes are regulated according to the hour of the day in these organisms, as well as in terrestrial animals and plants, is worthy of notice.

The phenomenon has almost escaped the notice of naturalists, although it is not at all unusual.

Claus in 1882, and Merejkowsky in 1883, have shown that the very young stages of Aequora and Obelia are found only in the morning; and Merejkowsky says that the successive steps in the formation of the planula of Obelia follow each other with such perfect regularity that each stage is met only at a definite hour in the morning. This author believes that the regularity is directly due to the action of light, but he gives no proof of this; and observations which have been made in the past three or four years at Beaufort, N.C., seem to show that the regularity is not due to external influences at all, but is determined within the organism, like the returning appetite which tells us that the dinner-hour has come.

The following are some of the instances which we have observed at Beaufort: —

Dr. E. R. Wilson finds that the eggs of Renilla, an Alcyonarian which lives upon the bottom below low-tide mark, are always laid at very nearly the same hour of the day; viz., 6 A.M. In a single case spawning took place at 5.30, and it was never observed later than 7 A.M.

The regularity appears to be independent of temperature, for the hour of spawning was the same in cold and warm days, although the temperature does have a very important influence on the rate of development of the embryo.

Dr. Wilson has observed a similar regularity in the spawning of Leptogorgia; and in this case, if I remember correctly, the hour was 4 A.M.

While Obelia lays its eggs early in the morning, I find that closely related Beaufort medusae spawn at night. Thus, Entima, Eirene, Turritopus, and Liriope discharge most of their eggs about 8 P.M., although captive specimens drop a few eggs irregularly at all hours. As one hydromedusa lays its eggs early in the morning, while another species lays them early in the evening, the regulating influence can hardly be the change of illumination. While studying the development of Lucifer, a pelagic crustacean, I found that sexual union occurs with great regularity between 6 and 8 P.M., while the eggs are laid between 8 and 10 P.M.; so that the early stages can be studied only between 10 P.M. and 7 A.M.

Dr. H. H. Donaldson has observed at Beaufort, that actinias of various genera are fully expanded only between 5 and 6 P.M. This is true of these animals in their natural homes, as well as in aquaria; and experiment showed that specimens which were kept in darkness expanded as promptly at the proper hour as those which were exposed to direct sunlight.

Among the animals which I have enumerated are some which live at the surface, as Entima and Obelia; some which live near low-tide mark, as the actinias; and some which live in deeper water, as Renilla. Some of them, as Lucifer, are vigorous swimmers, while some, as Gorgonia, are fixed.

Wilson's observations show that the regularity is not due to temperature, and Donaldson's experiments show that it is not the effect of light.

There is no evidence that it is due in any way to the direct influence of surrounding conditions, and I think we must believe that it has been established in each species by natural selection, on account of its advantage to the organism.

The phenomenon is especially important to the embryologist, for the failure to procure the fertilized eggs of any animal may be due to the fact that it is not captured or observed at the right hour of the day. It also shows the importance of marine observations when the naturalist may be on duty at all hours of the day and night. W. K. BROOKS.

### The star-nosed mole amphibious.

It is now more than fifteen years since Dr. Gilpin announced that the star-nosed mole (Condylura cristata) had been seen swimming, in winter, in Nova Scotia; and his record, so far as I am aware, remains unique.

Mr. Napoleon A. Comeau, who lives on the north shore of the St. Lawrence, near the point where the river widens into the gulf, has recently been fortunate enough to witness the habit in question. He writes: "On the 30th of April, 1884, I saw a star-nosed mole swimming under water like a muskrat. It swam directly across a small brook, keeping near the bottom, and moving very fast. The brook was about six feet wide and two feet deep. As the mole approached the bank, it turned up its snout, so that I plainly saw the 'star' on its nose, and took refuge under some branches where I could not get at it. Snow was still deep along the banks of the stream, and there was plenty of ice in places, though the mole crossed in an open space."

I have more than once caught this species in galleries that were half full of water, and have always found it most abundant in swampy situations along the borders of streams, but I never had the good fortune to see it swim. C. HART MERRIAM.